

encouraging. The rooms devoted to research are five in number. That next the lecture theatre, with furnaces and a fume chamber, is the chemical room, and contains in addition the apparatus used by the British Medical Chloroform Committee in its determinations. No. 19, with two dark rooms attached, is the general laboratory. This is the largest room on the landing; the centre is used for general purposes and the far end is half-shaded, and serves for galvanometers with the attendant apparatus. Two complete tables are furnished, one with a dark room for photography, and both are at present occupied.

On the opposite side of the long corridor are rooms 20A, 20B, and 21. The two former are fitted up for experiments on the circulation. No. 21 is the private room of the lecturer in charge; it is also used for research in experimental psychology; another galvanometer with resistances, &c., for the lecturer's use stands at one side. Two small rooms are available here, either as dark rooms or for other purposes.

The total laboratory accommodation for research is arranged for a maximum number of ten workers, it being considered that this was what might be reasonably expected, as quality is infinitely more important in work of this kind than quantity. The present workers are seven in number.

Several papers communicated to the Royal Society and other learned bodies testify to the activity of the place, and we shall expect, with some curiosity, a report on its first year of work. The University authorised the occupation of the laboratory in February last, and there does not appear to have been much time lost in getting to work.

PROF. WILLIAM HARKNESS.

BY the lamented death of Prof. Harkness, America loses one of the most devoted of her scientific workers, and the staff of the Washington Observatory one who has laboured strenuously to bring its reputation to the high level it at present enjoys. It is true that his official connection with that institution has recently ceased, but his abiding interest in its future welfare did not end with his enforced retirement. In the few words of farewell in which he announced his approaching resignation, he still evidenced his interest in the Observatory he had served so long and so faithfully, and in a spirit of true loyalty to practical astronomical science, he indicated the direction in which he considered the equipment deficient and the lines on which further extension should proceed.

In 1862 we first find his name mentioned as an assistant, working with the mural circle and prime vertical instrument at a time when Prof. Hubbard, whose name recalls another and a different sphere of scientific activity, had the control of those instruments, and determined the direction in which they should be employed. In the following year Prof. Hubbard died, and the new assistant was elected to the professoriate, but remained in charge of the same apparatus. From this time onward, the history of Prof. Harkness is written in the *Annals* of the Observatory, and in its activity and its development he found ample occupation, as in its increasing reputation and influence he found his reward. There is no need to go over in detail the various works in which he was engaged, whether as an accurate or painstaking observer, or as one singularly capable in the management and arrangement of large pieces of laborious, and perhaps uninteresting, work. Let his work on the reduction of the observations of Gilliss' zones, or his perhaps unthankful task in reducing the observations of the tran-

sits of Venus in 1874 and 1882 speak for his patience and energy. Just as little need we refer to his various determinations of differences of longitude, or of his participation in the observations of solar eclipses and their subsequent discussion; it is sufficient to say that no astronomical inquiry, that occasionally in the course of long years falls to the lot of an observatory assistant of the highest class, passed without his contribution to its success, or his suggestion for its improvement. Finally, we find him occupying the position of astronomical director of the Observatory and superintendent of the Nautical Almanac, a twofold task which must have taxed his activity, but it cannot be said that he was found wanting in either capacity.

Perhaps he will be best remembered, as he is best known, by his work on the "Solar Parallax and its Related Constants," though we should doubt if he would consider it as his best contribution to astronomical inquiry. In it he undertook the difficult, perhaps impossible, task, to assign a relative degree of accuracy to observations differing in character, in principle and in design, and to deduce from the multifarious evidence a precise value of the solar parallax, in which each of the different processes contributes its just share to the final result. But the extent and completeness of the inquiry constitute it a valuable historical record. His theoretical writings and his mechanical ethos each call for a word of remark. As evidence of the former, we may refer to his paper on the "Colour Correction of Achromatic Telescopes," and of the latter to the share he took in the transfer of the old observatory to its new site, to his remodelling of instruments, and, in particular, to his invention of the spherometer-calliper, which, we believe, was used with success in the testing of the instruments employed in the transit of Venus expeditions. In him astronomy loses one who has spent himself without stint in her service, and his colleagues, to whom we offer our respectful sympathy, a sincere friend and an able director.

W. E. P.

NOTES.

THE council of the British Association has unanimously nominated the Right Hon. Arthur James Balfour, F.R.S., to the office of president for the Cambridge meeting in 1904. It has also been agreed to recommend to the Association the acceptance of the invitation to South Africa for the year 1905.

MAJOR P. A. MACMAHON, F.R.S., has been elected a member of the Athenæum Club under the rule which empowers the annual election by the committee of nine persons "of distinguished eminence in science, literature, the arts, or for public services."

THE death is announced of M. Gaston Paris, distinguished by his critical contributions to philological science. M. Gaston Paris was a member of the French Academy, and head of the Collège de France.

THE death is announced of Dr. Hénocque, assistant director of the laboratory of biological physics in the Collège de France.

THE officers elected by the French Physical Society for the current year are as follows:—Vice-president, Prof. D'Arsonval; secretary, M. H. Abraham; vice-secretary, Prof. Jules Lemoine; treasurer, M. de la Touanne. The president (M. H. Poincaré) announces that the Society has received an anonymous donation of 2000 francs.

A NEW series of the *Journal des Savants* commences with the present year. It will in future be under the control of

an editorial committee, consisting of a representative of the Académie Française; M. Léopold Delisle, representing the Académie des Inscriptions et Belles Lettres; M. Berthelot, representing the Académie des Sciences; M. Jules Guiffrey, representing the Académie des Beaux Arts; and M. R. Daresté, representing the Académie des Sciences Morales et Politiques. M. Henri Dehérain is secretary of the committee.

MOUNT VESUVIUS is reported to be in a state of eruption and to be ejecting scoriæ and incandescent masses which explode.

MR. T. H. HOLLAND has been appointed director of the Geological Survey of India, in succession to Mr. C. L. Griesbach, who has retired.

A SEVERE and prolonged earthquake is reported to have occurred in the island of Dominica on March 7. An earthquake shock has also been felt at Aquila, sixty miles north-east of Rome.

A REUTER'S despatch from Mexico announces another eruption of the volcano Colima on the morning of March 6, this being the most violent yet recorded. The eruption was accompanied by showers of ash, dense clouds darkened the sky, and there were deep subterranean roars. Shocks of earthquake were felt at intervals along the west coast. It is reported that ashes have fallen in great quantities at Uruapan, a hundred miles distant.

A REUTER'S message reports that earthquake shocks were felt in the Saxon district of Vogtland and the Erzgebirge on March 5 and March 6. At Graslitz, some twenty miles to the west of Karlsbad, the inhabitants left their houses and passed the night in the streets. The tremors were felt as far as Plauen, Reichenbach and Zwickau, situated within a radius of twenty-five to thirty miles to the north of Graslitz. At Unter-Sachsenberg, in the Zwickau district, the houses trembled for several seconds. Great excitement prevailed at Karlsbad and Asch, where shocks were also experienced, although they were of a less violent character.

ON March 4 Dr. M. W. Travers gave a lecture before the University College Chemical and Physical Society on "The Attainment of Low Temperatures." An account of the various methods of liquefying gases was given. The simplest case of all, where a gas such as sulphur dioxide can be liquefied by the application of pressure alone, was first experimentally shown. Those cases in which intense cold as well as pressure is needed were next considered; of the methods used in such cases the principle of adiabatic expansion as used by Olszewski to liquefy oxygen and hydrogen was explained and experimentally demonstrated. By this means, however, very little more than a mist of liquefied gas can be obtained. The regenerative cooling process first successfully applied by Hampson in England and Lindé in Germany was then described, and a brief account was given of its application to the liquefaction of hydrogen by the lecturer. Dr. Travers also described in detail his latest form of hydrogen liquefier, in which the regenerative cooling is practically perfect, and the escaping hydrogen is only one or two degrees below the air temperature. During the lecture the solidification of hydrogen was repeated, and a spectrum tube was filled with helium and neon by solidifying everything but helium and neon from a sample of air by means of liquid hydrogen.

IN December last several gentlemen engaged in various departments of scientific work in Newcastle-upon-Tyne met to consider the possibility of enabling local workers in science

to meet together in a less formal manner than is possible at the ordinary meetings of the various scientific and technical societies, and resolved to establish a club "to serve as a social meeting place for men interested, professionally or otherwise, in scientific work." Such a club has now been established under the name of "The Northern Scientific Club"; a club room has been engaged, and informal meetings are held every Saturday evening. At the first annual meeting the Hon. C. A. Parsons, F.R.S., was elected president, Mr. F. T. Marshall chairman of committee, and Messrs. F. C. Garrett and T. Hanning hon. secretaries. Nothing but good can result from such a mingling of the professor and the works manager, and from the bringing into more friendly relationship men connected with different branches of science. The new club should become an important and useful institution in Newcastle.

THE Agricultural Organisation Society has arranged a conference on agricultural cooperation to be held at University College, Reading, on Saturday, March 21, under the presidency of the Lord Lieutenant of Berks, Mr. J. Herbert Benyon.

A MEETING in commemoration of the tercentenary of the reign of Queen Elizabeth will be held at the Royal Geographical Society on March 23. Addresses will be delivered by the president, Sir Clements Markham, K.C.B., Mr. Edmund Gosse (Raleigh), Mr. Julian Corbett (Drake), Prof. Silvanus P. Thompson, F.R.S. (William Gilbert and terrestrial magnetism), and others. There will also be an Elizabethan exhibition of portraits, globes, maps, atlases, instruments, navigation books and various relics.

A REUTER message from Brisbane, dated March 10, states that a disastrous storm has visited Townsville. The damage done by the storm is estimated at 200,000*l.* The town is practically wrecked.

THE Postmaster-General has appointed the following delegates to represent this country at the International Telegraph Conference to be held in London at the end of May:—Mr. J. C. Lamb, C.B., C.M.G., Mr. John Ardron, Mr. P. Benton, Mr. R. J. Mackay, and Mr. F. W. Home.

THE Post Office authorities have agreed to connect the Marconi wireless telegraph station at Poldhu, Cornwall, with the Post Office station at Falmouth. Though this will facilitate the transmission of ethergrams, it represents but a slight concession to the requirements of Mr. Marconi, inasmuch as the Marconi messages will, at Falmouth, have to take their turn with ordinary messages, which, in the case of commercial communications, might result in serious delay. The company has for some time past been urging the Department to grant it the same facilities which other cable companies enjoy—viz. that a cable may be handed in at any post office and transmitted by the Marconi system at an inclusive charge, and negotiations with this object are still proceeding.

THE use of wireless telegraphy for communication between lightships and lighthouses and the shore was referred to at the annual meeting of the Royal National Lifeboat Institution on March 5 by Lord Charles Beresford. Mr. Gerald Balfour, M.P., in his remarks upon the matter, said it naturally took time to deal with the question of the adoption of wireless telegraphy, owing to the fact of private and other interests being involved, but he assured the meeting that the question was receiving the careful attention of the Board of Trade, and he hoped it would not be long before such communication as that suggested by Lord Charles Beresford would be effected.

SPEAKING at the Chambers of Commerce conference on March 5, Mr. Marconi said wireless telegraphy had now, he thought, reached a stage in which it could be satisfactorily employed for communications between lightships, lighthouses and the shore. In England at present there is no lighthouse connected with the land by this system, but instances outside England where such communications have been established and have performed useful service can be quoted. In England the system was once tried between the East Goodwin lightship and the shore, and Mr. Marconi said he believed it was in the records of Trinity House that it worked satisfactorily. As to the cost, up to twenty or thirty miles, or even a greater distance, this would amount to from 300*l.* to 400*l.* Cables, he pointed out, cost at least 200*l.* per mile.

THE New York Central Railway has, the *Westminster Gazette* announces, made arrangements with the American DeForest Wireless Telegraph Company to instal its apparatus on the twenty-hour express from New York to Chicago. The installation is to be complete by April 1. It will be run for two months as an experiment, and if successful the plan will be permanently adopted.

By the joint efforts of the Middlesex Field Club and the Selborne Society, a committee has been formed with the view of organising a Home Counties Nature-Study Exhibition, to be held in London during the coming summer.

AN international exhibition is to be held at Limoges from May to September this year. The exhibits will be comprised under the heads of education, the liberal arts, general mechanics, electricity, civil engineering, agriculture, horticulture, forestry, metallurgy, social economics, hygiene, special applications of medicated alcohol to motive power, lighting and warming, and other departments.

ON Tuesday next, March 17, Sir Robert Ball will commence a course of three lectures at the Royal Institution on "Great Problems in Astronomy." The Friday evening discourse on March 20 will be delivered by Prof. E. A. Schafer, on the "Paths of Volition"; on March 27 by Prof. Herdman, on the "Pearl Fisheries of Ceylon"; and on April 3 by Lord Rayleigh, on "Drops and Surface Tension."

A LETTER received by Sir Alfred Jones, chairman of the Liverpool School of Tropical Medicine, from Prince d'Arenberg, president of the Suez Canal Company, informs him that the Campagnie du Canal de Suez is anxious to assist in the work that the Liverpool School is carrying on in West Africa, and has accordingly resolved to subscribe 50*l.* sterling to the school.

THE officials of the Sanitary Department of the Egyptian Government, into whose hands the expenditure of the recent gift of 40,000*l.* entrusted to Lord Cromer and his successors in office by Sir Ernest Cassel for the relief of ophthalmia and eye diseases has virtually passed, have decided to employ it in establishing a "travelling dispensary" in the form of a tent, to suffice for all purposes of operation and treatment, and to work solely in the provinces.

IN the House of Commons on March 4, in reply to a question as to the course the Government proposed to take on the expiration of the present Vaccination Act, and whether legislation would be proposed this Session to make revaccination generally compulsory, Mr. Balfour stated that it is proposed to renew the existing Act for this year, and to defer any further legislation on the subject to a future Session.

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THE council of the Zoological Society of London has just sold to an American purchaser the Society's African elephant "Jingo," we believe on account of periodical outbreaks of temper, which rendered him dangerous and practically unmanageable. "Jingo" was purchased by the Society in July, 1882, at which date he stood 4 feet 2 inches in height and weighed 788 lb. He was then believed to be about three or four years old. At the time of his departure he was considered to be the largest elephant ever kept in captivity.

IT is reported by Reuter that at the Ministry of Foreign Affairs in St. Petersburg a Russian committee is being created for historical, archæological, linguistic and ethnographic research in Central and East Asia. The regulations applying to the committee allow all men of science without distinction of nationality to take part in the labours of the committee. The president and delegates of the foreign committee of the International Association for Research in north-east Asia will have the right to attend the sittings of the Russian committee at St. Petersburg.

THE Viceroy has decided, it is announced in the *Pioneer Mail*, to devote the donation of 20,000*l.* from Mr. Henry Phipps to two objects, a laboratory for agricultural research, to be called the Phipps Laboratory, which will probably be situated at Dehra Dun, and the provision of a second institute in the south of India similar to that at Kasauli, which has already conferred such immense benefits upon Europeans and natives alike by saving them from hydrophobia. The donation will be devoted to the requisite buildings, while the site will in both cases be provided by Government, which will also in the first case contribute to and in the second undertake the cost of maintaining the institution.

THE *Athenæum* announces the death of Ritter von Scherzer, the Austrian explorer, who from 1852 to 1855, in company with the naturalist Moritz Wagner, carried out extensive scientific exploration in Northern and Central America. In 1857 he was appointed chief scientific adviser to the famous expedition of the *Novara*, the results of which were published in the volumes of the "Voyage of the Austrian Frigate *Novara* Round the World," which has appeared in many editions since its first issue in 1861-2, and has been translated into English.

THE following countries took part in the international balloon ascents on the morning of January 9:—France, Germany, Austria, Spain, Russia and the United States (Blue Hill). At Itteville, the new balloon station established by M. Teisserenc de Bort, twenty-five miles south of Paris, the lowest temperature, $-65^{\circ}2$ C., was at a height of 10,650 metres, temperature on the ground $5^{\circ}1$; an inversion, $9^{\circ}2$, occurred at 520 metres. At Strassburg a temperature of $-63^{\circ}1$ was registered at 10,600 metres, temperature at starting $1^{\circ}5$; inversion $9^{\circ}5$ at 500 metres. At Berlin the minimum temperature was $-50^{\circ}0$ at 11,400 metres, temperature on the ground $5^{\circ}8$, inversion $6^{\circ}3$ at 537 metres. At Vienna the readings were: on the ground $1^{\circ}0$, $-10^{\circ}0$ at 4090 metres, $-60^{\circ}0$ at 10,230 metres. Ascents in manned balloons were made at Munich, Berlin, Vienna and Guadalajara. An area of high barometric pressure lay over the south-east of the Continent; the ascents from Itteville and Strassburg appear to have been made under the influence of a depression lying to the westward.

A BLUE-BOOK has been issued containing the report of the Departmental Committee appointed to prepare a draft of the regulations to be made in pursuance of Section vii. of the Cremation Act, 1902. The objection which has

always been urged against cremation is that it might render the detection of crime impossible, as all evidence is necessarily destroyed by the process. To obviate this as far as possible, it is recommended that no cremation should be allowed to take place unless the cause of death can be definitely certified by the medical attendant, who is required to fill up an exhaustive certificate, which has to be submitted to and must be approved by, a medical referee, unless an autopsy has been performed by an expert pathologist appointed for the purpose, or an inquest has been held.

THE applications of electricity in the treatment of disease are now being carefully studied, and almost every hospital has its X-ray department. Introduced originally for diagnostic and localising purposes, Röntgen rays have been found to possess properties which may in the future revolutionise the treatment of certain diseases. Carelessly applied, the rays may set up considerable inflammation of the skin exposed to their action, while lupus and malignant growths may be considerably benefited, or even be cured, by a number of exposures to these remarkable emanations. The rays seem to possess a selective action, destroying diseased tissues and bringing about reparative action, but leaving the healthy ones untouched. In cases of cancer hopeful results have been obtained; the treatment is painless, and it seems to relieve pain and to inhibit the progress of the disease. The mode of action of Röntgen rays is doubtful; by some it is supposed to be a bactericidal one, but more probably an inflammatory reaction is set up leading to phagocytosis and leucocytosis, whereby the wandering "scavenger" cells of the body accumulate, attack and destroy the morbid tissues.

A PAMPHLET has been received urging the adoption of Mr. J. Jackson's "System of Upright Penmanship." There can be no doubt that sloped writing necessitates a strained and asymmetrical posture, and has contributed to the production of countless cases of lateral curvature of the spine and of eye-strain, while upright writing is compatible with a natural and healthy posture. This fact alone constitutes a sufficient, and, indeed, urgent, reason for the teaching in all schools of upright in place of the old-fashioned sloped writing. But it seems that some of the advocates of upright writing claim as one of its principal advantages the fact that it can be easily executed with the left hand. They propose to form an association to promote the teaching of upright writing with both hands, believing that the child taught to write equally well with both hands will easily acquire left-handed skill in all other manipulations. This belief is probably well founded, but there are at present no sufficient grounds for the assumption that a child's mental development will be aided by the training of his left equally with his right hand. The balance of probability seems to be against it. It is further proposed to teach children to write different matter simultaneously with the two hands, a feat which appears to have been accomplished in one or two instances. If this proposal should be carried into practice the results should be of great interest to psychologists, but the process may be prejudicial to the development of strong and sane personalities by the subjects of the experiment.

Two "meters" for testing the penetrating power of Röntgen ray tubes have been described by Dr. B. Walter in the *Fortschritte auf dem Gebiete der Röntgenstrahlen*.

PROF. B. SRESNEWSKY sends us some interesting geometrical constructions for the curvature of an air current in the presence of a vortex or cyclone, published in the *Bulletin of the St. Petersburg Academy*.

IN the *Transactions of the Scotch Institution of Engineers and Shipbuilders*, Mr. C. A. Matthey investigates the effect of the inertia of the connecting rod in communicating vibration to an engine, and discusses the possibility of so balancing the engine as to remove the vibration entirely.

IN connection with an epidemic disease discovered among the eels of the ponds at Orbetello, a new bacillus has been discovered by Dr. F. Inghilleri, whose investigations are published in the *Atti dei Lincei*. The disease in question is known as the "red plague," and the author considers it undesirable that eels so attacked should be used for food.

THE second part of M. Lucien Poincaré's annual review of progress in physics is contained in the *Revue générale des Sciences* for January 30. It deals with optics; magnetism and electricity; mechanics, including acoustics, elasticity and gravitation; thermodynamics, including the phase law, and low-temperature researches.

PROF. LUSSANA AND DR. CARNAZZI discuss in the *Nuovo Cimento* the effect of interposing a solid dielectric body on the length of the electric spark-discharge in air, and in particular the remarkable fact that, by placing the body close to the anode, the length of the spark may be considerably increased.

PROFS. LUMMER AND PRINGSHEIM propose in the *Berichte of the German Physical Society* a scale of temperature based on the theory of radiation which possesses many of the advantages of the absolute scale, but has the further advantage of being better adapted to the practical measurement of high temperatures.

IN connection with the calculation of the self-induction of a ring of rectangular section, Prof. Garbasso (Turin) has communicated to the *Nuovo Cimento* a demonstration that the assumption that the current is uniformly distributed across the section of the ring leads only to an error of the order of 5 per cent.

PROF. AUGUSTO RIGHI has communicated to the Bologna Academy (1902) some researches on the acoustical phenomena presented by the discharges of condensers. The sounds were obtained when the charge took place in a vacuum tube or through a flame, and the phenomena presented several points of difference from the effects observed by Duddell in the case of the electric arc.

FROM Signor Riccò's report in the *Atti dei Lincei*, we gather that the work connected with the photographic survey of the heavens is making substantial progress at the Observatory of Catania. During the year 533 photographs have been taken, and 31,200 measurements of stars have been made on 170 plates. In addition, the catalogue of stars of reference has been continued, and a number of redeterminations have been made and referred to the year 1900.

FROM a generalisation of Carnot's cycle, Mr. Sanford A. Moss, writing in the *Physical Review*, gives a proof that in a gas engine where the working substance may be regarded as a perfect gas, the efficiency is the same as for a Carnot engine, with the same range of compression temperatures.

SOME observations on the heat produced when powders are wetted have been published in the *Atti of the Venetian Institution* by Messrs. M. Bellati and L. Finazzi. The results, so far as they concern the influence of the size of the grains, differ from those of Linebarger. The authors further find that the quantities of heat produced by the addition of equal quantities of water decrease as more water is added.

SOME observations on seiches and their relation to sea waves are given by Messrs. S. Nakamura, Y. Yoshida and H. Nagaoka in No. 15 of the Tokio Physico-mathematical Reports. Investigations were begun in 1901 on the seiches of Lakes Biwa and Iakone, and this year the instrument—a portable tide gauge described by Mr. Nakamura—was carried to the bay of Osaka. Mr. Nagaoka finds that seiches in lakes and the destructive sea waves observed on the coast of Japan are similar from the hydrodynamical point of view, and considers that the latter waves may be predicted, resulting in saving of life.

It is proposed to publish an index volume of the three first series of the *Journal de Physique*, including an analytical subject-index and an index of authors' names. The volume will be drawn up by MM. E. Bouty and B. Brunhes, with the collaboration of MM. Bénard, Carré, Couette, Lamotte, Marchis, Maurain, Roy and Sandoz.

PROF. ERNEST LEBAU has published a short note on the manuscript of a course of lectures delivered at the Collège Royal by Prof. J. N. Delisle on the geometry of the celestial sphere. The manuscript, which he calls manuscript D, was obtained from a dealer in old books, and is a quarto volume of 460 pages, written neatly in the handwriting of a good copyist of the eighteenth century; and from references to the prediction of a transit of Mercury, as well as the documents of the college, its date has been fixed as 1719. It has been presented to the library of the Paris Observatory.

A VERY interesting essay on Mendel's law of heredity, by Mr. W. E. Castle, appears in the January issue of the *Proceedings of the American Academy*.

IN *Annotationes Zool. Japonensis*, Mr. I. Ikeda records the occurrence in Japanese waters of an Australian species of the aberrant annelid-like genus *Phoronis*.

THE feature in the *Entomologist's Monthly Magazine* for March is the record of two additions to the British fauna. The first is *Kermes quercus*, a continental scale-insect, of which colonies were taken at Wimbledon and in Sherwood Forest; while the second is the beetle *Cedemera virescens*, of which examples were obtained some years ago in Norfolk, although not at the time identified with the common continental form.

THE osteology and affinities of American Cretaceous and Eocene birds are discussed by Mr. F. A. Lucas in No. 1320 of the *Proceedings of the U.S. National Museum*. Marsh's *Hesperornis gracilis* is assigned to the new genus *Hargeria*.

TO *Naturwissenschaftliche Wochenschrift* of February 15 and 22 Herr J. Meisenheimer contributes an interesting article on the method of estimating the degree of variation occurring in the individuals of a species, and the bearing of the results thus obtained on zoology.

THE scientific *Bulletin* of the Royal Belgian Academy contains the report of an address, by Prof. E. van Beneden, on the reproduction of animals and the continuity of life. In another address M. Masius discourses on immunity to infection in man and the lower animals.

REMARKS on the Atlantis problem forms the title of a paper by Dr. R. F. Scharff in the *Proceedings of the Royal Irish Academy*. The author is of opinion that until the Miocene the Azores and Madeira were connected with Portugal, and that a land-bridge extended from Morocco *viâ* the Canaries to South America. Further, it is urged that the Atlantic islands were again connected with Europe and Africa after man made his appearance.

THE movements and reactions of fresh-water planarians, or flat-worms, form the subject of a long article by Dr. R. Pearl, of Michigan, in the February number of the *Quarterly Journal of Microscopical Science*. These movements are, in the main, what may be termed reflex; that is to say, they are dependent upon external impulses, and are not due to anything resembling volition. In another article Miss Sollas describes a new generic type of compound ascidian, from the Malay Peninsula, under the name of *Hyphurgon skeati*.

IN his notes on whaling and sealing during 1902, Mr. T. Southwell (*Zoologist* for February) records the capture of twelve Greenland whales by British vessels, most of which were full-grown individuals with "bone" from 10 to 10½ feet in length. Whalebone now fetches as much as 2500*l.* per ton; the total value of the seals and whales taken by British vessels is estimated at 32,420*l.* In the same journal Mr. Frohawk adduces arguments to show that the common British bean-goose is *Anser arvensis*, and not, as generally supposed, *A. segetum*.

Two papers—one on mammals, by Mr. Miller, and the other on birds, by Mr. Richmond—in the *Proceedings of the U.S. National Museum* are devoted to specimens collected by Dr. Abbott on the coast of Sumatra and certain adjacent islets. It is considered that every distinguishable form of mammal from these islets is entitled to rank as a species—a course of procedure that will render mammalogy an almost impossible science. The most interesting mammal is a rat, referred by Mr. Miller to a new genus and species, under the name *Lenothrix canus*.

IF only it be adequately carried out, an excellent scheme is announced in the February number of the *Field Naturalist's Quarterly*. This is a "symposium" in which the various members of the British fauna, commencing with the lowest, will be treated by different writers, mainly from the point of view of habits and adaptation to surroundings. The first of the series will commence in the next issue. It is perhaps not very hopeful to find, in the very next article, the marten called *Martes sylvatica*, which is certainly not its proper name.

IN its report for 1902 the council of the Royal Zoological Society of Ireland has to record a most successful year, the list of donations having been probably more numerous and more valuable than on any previous occasion, and including a fine giraffe from the Sudan. The expenses connected with the carriage of the latter animal, and the outlay on the "Roberts' house" (which was opened during the year) have, however, seriously crippled the finances of the Society. Lion-breeding has, as usual, been successful, and attention is called to certain cubs of abnormal form which, it is thought, may be reversions to an extinct type. The report is illustrated with some excellent photographs.

A THIRD edition of Mr. Andrew Pringle's "Practical Photo-Micrography" has been published by Messrs. Iliffe and Sons, Ltd., at 3*s.* 6*d.* net. The work has been largely rewritten, and important advances in photographic science and method have been utilised in the new edition.

MESSRS. MACMILLAN AND CO., LTD., have published Mr. S. L. Loney's "Arithmetic for Schools" in two parts at 2*s.* 6*d.* each. The first part takes the subject as far as proportionate division, and includes contracted methods of multiplication and division; the second part completes the whole subject, concluding with upwards of five hundred miscellaneous examples.

AN exceptionally fine series of plates, reproduced from photographs, accompanies Dr. Tempest Anderson's paper on the recent volcanic eruptions in the West Indies, contained in the March issue of the *Geographical Journal*. The plates, together with Dr. Anderson's descriptions, constitute a concise and graphic story of the characteristics of the eruptions of Mont Pelée and the Soufrière of St. Vincent.

SEVERAL of the monthly magazines for March contain articles upon scientific subjects. Under the title "What shall we be?" Mr. Gustave Michaud discusses in the *Century* the question as to what will be the distinguishing characteristics of the coming race in America, and Prof. F. H. Giddings comments on the conclusions arrived at. Major-General Sir C. W. Wilson, K.C.B., contributes to the *Monthly Review* an account of the excavation of a Levitical city—Gezer. Dr. A. R. Wallace, F.R.S., in the *Fortnightly Review*, considers man's place in the universe as indicated by astronomy; and the general nature of his article may be gathered from a sentence near the end:—"The three startling facts—that we are in the centre of a cluster of suns, and that that cluster is situated not only precisely in the plane of the Galaxy, but also centrally in that plane—can hardly now be looked upon as chance coincidences without any significance in relation to the culminating fact that the planet so situated has developed humanity." Mr. W. A. Shenstone, F.R.S., writes in the *Cornhill* on the new chemistry, and Mr. Charles Richardson attempts in the *Westminster Review* to answer the question: Is natural science self-contradictory?

THE additions to the Zoological Society's Gardens during the past week include a Moustache Monkey (*Cercopithecus cephus*) from West Africa, a Crested Porcupine (*Hystrix cristata*) from South Africa, two Mexican Eared Owls (*Asio mexicanus*) from Mexico, two Westernmann's Cassowaries (*Casuarus westernmanni*) from New Guinea, two King Crabs (*Limulus polyphemus*) from North America, deposited.

OUR ASTRONOMICAL COLUMN.

ELEMENTS AND SEARCH-EPHEMERIS FOR COMET 1896 V (GIACOBINI).—In No. 3848 of the *Astronomische Nachrichten* Herr M. Ebell gives the following set of elements and ephemeris for this comet:—

Epoch 1896 October 5.5, M.T. Berlin.

$$\begin{aligned} M &= 356^{\circ} 39' 7''.4 \\ \omega &= 140^{\circ} 31' 51''.1 \\ \Omega &= 193^{\circ} 29' 4'' \\ i &= 11^{\circ} 21' 47''.7 \end{aligned} \quad \left. \vphantom{\begin{aligned} M &= 356^{\circ} 39' 7''.4 \\ \omega &= 140^{\circ} 31' 51''.1 \\ \Omega &= 193^{\circ} 29' 4'' \\ i &= 11^{\circ} 21' 47''.7 \end{aligned}} \right\} 1900^{\circ} 0.$$

$$\begin{aligned} \mu &= 533''.805 \\ \log a &= 0.548416 \\ T &= 1896 \text{ October } 28^{\circ} 07' \\ P &= 6.647 \text{ years.} \end{aligned}$$

Taking the period of 6.647 years as correct, the next perihelion passage should take place on June 22 or 23, and for this time the ephemeris which accompanies the elements is calculated.

Ephemeris 12h. M.T. Berlin.

1903.	a.	h.	m.	s.	δ.	log r.	log Δ	Brightness.
March 18	20 10 50	- 10 32.9	0.2492	0.3313	0.63			
" 26	20 32 46	- 8 59.0	0.2381	0.3118	0.72			
April 27	22 3 40	- 1 7.0	0.1975	0.2363	1.23			
May 29	23 38 44	+ 7 53.7	0.1697	0.1733	1.88			

The ephemeris is extended to November 29, and it indicates that the maximum brightness (2.7) will occur on August 25.

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TRANSPARENCY OF COMET 1902 b.—In order to test the accuracy of the assertion that comets are perfectly transparent, Prof. O. C. Wendell, of Harvard College Observatory, made a series of observations, with the polarising photometer attached to the 15-inch equatorial, of the magnitudes of two faint stars when the comet 1902 b was passing before one of them on October 14.

On tabulating the results of the measurements, it was found that the mean difference of the magnitude interval of the two stars under normal conditions, and when the comet was passing before one of them, was only ± 0.02 , thereby indicating that the absorption of light by the comet, if any, was insensible, and probably did not exceed one or two hundredths of a magnitude (*Astronomische Nachrichten*, No. 3848).

FEBRUARY METEORS.—In No. 329 of the *Observatory* Mr. Denning describes a bright meteor which he observed at 9h. 46m. on February 18, the apparent path being from $35^{\circ}+44^{\circ}$ to $19^{\circ}+42^{\circ}$.

Mr. Denning further remarks that this meteor appeared to come from a position near to the radiant point of a shower, the Aurigids, of which he has observed seven members, and of which the mean radiant point is about $75^{\circ}+41^{\circ}$, and he suggests that this particular stream is worthy of further consideration by meteor observers in order to determine more accurately its radiant point and the time of its maximum.

The duration of the shower is at present doubtful, but it certainly extends over the period February 7-23, and there is reason to believe that it is sustained during March and April.

PROPER MOTIONS OF STARS.—Vol. xvii. No. 1 (January) of the *Astrophysical Journal* contains a discussion, by Mr. Gavin J. Burns, of the proper motions of the 2641 stars given in Bossert's catalogue, which was published in the *Annales de l'Observatoire de Paris* in 1896.

After analysing the data Mr. Burns comes to the following conclusions:—(1) The stars increase in number as they decrease in size; (2) the stars thin out as their distances from the solar system increase; and, lastly, it appears that double stars generally have large proper motions, as is shown by the following comparison:—The average proper motion of 778 stars (from the first to the fifth magnitudes) as given in Dunkin's list is $0''.15$, whilst the average proper motion of 54 double stars (from first to seventh magnitudes) as obtained from Struve's catalogue is $0''.37$.

OBSERVATIONS OF JUPITER'S MARKINGS.—In the February *Bulletin de la Société Astronomique de France*, Senor José Comas Sola publishes the observations of Jupiter's markings which he has made since a previous publication of results in the September *Bulletin*.

These later observations fully confirm Senor Sola's previous statement that the trails of dark spots are at a level below that of the Great Red Spot, and that they form a current which flows beneath, and independent of, that spot.

This is plainly shown in the drawings which accompany the communication, for whereas in the drawing made on September 15 the trail of dark spots is seen adjacent to, and apparently emerging from behind, the Great Red Spot, on the later drawings it is seen that the distance between the two sets of phenomena is gradually increasing. The observations also indicate that the grey markings, which have been observed in the zone between the two dark bands in the southern temperate region, are in reality trails of dark material joining together the black spots which appear on the separate bands.

SOLAR PHENOMENA AND METEOROLOGY.—M. l'Abbé Loisir, of Thoisy-la-Berchère (Gold Coast), has just completed a daily record of the solar and meteorological phenomena for the past eleven years. The record contains daily drawings of the spots and faculae on the sun's disc, and the ordinary daily meteorological data. Recognising the intimate relations which have been shown to exist between these two sets of phenomena, M. Loisir now proposes to investigate carefully this accumulation of material with a view of obtaining evidence for, or against, the suggested interrelations (*Bulletin de la Société Astronomique de France*, February).